

WHAT IS CLAIMED IS:

1. A system for handling liquid samples, comprising:
 - at least one device for handling liquid samples (1)
 - having at least two superposed and interconnected planar elements (2, 3) between which a well (4) for a liquid sample is formed which extends between an outwardly leading mouth (5) to receive and/or deliver a liquid sample and an outwardly leading passage (16) to connect the well (4) to a displacement device (21) for air or another gas, and
 - a handling apparatus having a displacement device (21), a device for releasably mounting the at least one device for handling the liquid samples (1), and a line (20) sealingly connecting the displacement device (21) to the passage (16) if the device for handling liquid samples (1) is disposed in the device for releasably mounting.
2. The system for handling liquid samples, comprising:
 - at least one device for handling liquid samples (1)

- having at least two superposed and interconnected planar elements (2, 3) between which a well (4) for a liquid sample is formed which is connected to an outwardly leading mouth (5) to receive and/or deliver liquid samples and has a displaceable limitation wall for displacing a fluid contained in the well (4) which, for displacement, is adapted to be connected to an external actuation device,
 - and a handling apparatus having an actuation device and a device associated therewith for releasably mounting the at least one device for handling liquid samples with the actuation device being coupled to the displaceable limitation wall of the device for handling liquid samples (1) if the latter is disposed in the device for releasably mounting.
3. The system according to claim 1, wherein the planar elements (2, 3) and/or the limitation wall of the device for handling liquid samples (1) are laminas and/or sheetings and/or membranes.

4. The system according to claim 1, wherein the planar elements (2, 3) of the device for handling liquid samples (1) are made of plastic and/or glass and/or a semiconductor material and/or metal.
5. The system according to claim 1, wherein the well (4) of the device for handling liquid samples (1) comprises an indentation in one side of a planar element (2) which is covered by another planar element (3) and/or wherein the well (4) comprises indentations in the sides facing each other of two superposed planar elements (2, 3) and/or wherein the well (4) comprises a through opening in a planar element (2, 3) which is covered by planar elements (2, 3) on either side.
6. The system according to claim 5, wherein a planar element (2) of the device for handling liquid samples (1) covers a lamina having a well formed as an indentation on one side and another planar element (3) is a sheeting which covers the lamina on the side where the well (4) is.

7. The system according to claim 1, wherein the mouth (5) of the device for handling liquid samples (1) is extended outwardly in a first peripheral area of the interconnected planar elements (2, 3) between the interconnected planar elements (2, 3) or is extended outwardly in a cross direction through one of the interconnected planar elements (2, 3).
8. The system according to claim 1, wherein the passage (16) of the device for handling liquid samples (1) is extended outwardly in a cross direction through one of the interconnected planar elements (2, 3) or is extended outwardly in a second peripheral area of the interconnected planar elements (2, 3) between the interconnected planar elements (2, 3).
9. The system according to claim 7, wherein the mouth (5) of the device for handling liquid samples (1) is extended outwardly between a lamina and a sheeting and/or the passage (16) is extended outwardly in a cross direction through a sheeting covering a lamina.

10. The system according to claim 7, wherein the mouth (5) of the device for handling liquid samples (1) is disposed in a first peripheral area or in the vicinity thereof and the passage (16) is disposed in the vicinity of a second peripheral area remote from the first peripheral area or in this second peripheral area.
11. The system according to claim 1, wherein the device for handling liquid samples (1) is substantially of a tongue shape and has the mouth (5) in a first end side and the passage (16) in a longitudinal side.
12. The system according to claim 11, wherein the device for handling liquid samples (1) is tapered towards the mouth (5) in the main plane of extension of the planar elements (2, 3) and/or in a direction perpendicular thereto.
13. The system according to claim 1, wherein the well (4) of the device for handling liquid samples (1) is a channel.

14. The system according to claim 1, wherein the mouth (5) of the device for handling liquid samples (1) is disposed at one end of the well (4) and the passage (16) is disposed at the other end of the well (4).
15. The system according to claim 13, wherein the channel substantially extends in the longitudinal direction of the device for handling liquid samples (1).
16. The system according to claim 13, wherein the channel of the device for handling liquid samples (1) is of a meander shape or a spiral shape.
17. The system according to claim 1, wherein the well (4) of the device for handling liquid samples (1), at its end opposed to the mouth (5), is connected to a secondary well (8), which is smaller than the well (4), via a channel having a cross-section which is smaller than that of the well (4).
18. The system according to claim 1, wherein the well (4) of the device for handling liquid samples (1) is tapered towards the mouth (5) in a nozzle-like manner and/or is expanded in a diffuser-like manner.

19. The system according to claims 1, wherein the mouth (5) of the device for handling liquid samples (1) comprises a plurality of mouth channels which are oriented in parallel or towards a common centre or are divergent.
20. The system according to claim 1, wherein the device for handling liquid samples (1), in the vicinity of the mouth (5), has at least one step (35) and/or at least one guide element in order to be supported and/or guided on a reference object.
21. The system according to claim 1, wherein the device for handling liquid samples (1), outside around the border of the passage (16), has a sealing surface to sealingly connect a displacement device (21) there.
22. The system according to of claim 1, wherein the well (4) of the device for handling liquid samples (1) has a plurality of reception chambers (4^{IV}) which are connected to each other by connection channels (33).

23. The system according to claim 1, wherein at least one planar element (2, 3) of the device for handling liquid samples (1) has a surface adjacent to the well (4) that is chemically modified and/or is structured.
24. The system according to claim 1, wherein the device for handling liquid samples (1) has at least one additional functional element which is a membrane (17) and/or a nonwoven fabric and/or a filtration element and/or an optical window and/or an electrode and/or a surface-enlarging and/or turbulence-promoting and/or shear force-producing structure and/or is a positioning element and/or a catch member and/or a code (14).
25. The system according to claim 24, wherein the membrane (17) and/or the nonwoven fabric and/or the filtration element of the device for handling liquid samples (1) is disposed between two planar elements (2, 3) between a well (4) and a passage (16) and/or at least two wells (4) and/or one well (4) and a mouth (5) of the various planar elements (2, 3).

26. The system according to claim 25, wherein a planar element (2) of the device for handling liquid samples (1) has at least one indentation (18) in which the membrane (17) and/or the nonwoven fabric and/or the filtration element are placed so that it/they forms/form a plane, which is completely covered by another planar element (3), with the adjacent area of the planar element (2).
27. The system according to claim 24, wherein the well (4^V) for a sample liquid of the device for handling liquid samples (1), in a planar element, have associated therewith a well (36) for a dialytic liquid in a further planar element and the two wells (4^V, 36) are separated by a dialytic membrane (36') disposed between the planar elements.
28. The system according to claim 27, wherein the well (36) of the device for handling liquid samples (1) for a dialytic liquid has at least one aperture (37, 38) to pass a dialytic liquid therethrough.

29. The system according to claim 24, wherein the code (14) and/or the positioning element and/or the catch element, at an outside of the device for handling liquid samples (1), are disposed at a spacing from the mouth (5).
30. The system according to claim 1, wherein at least one planar element (2, 3) of the device for handling liquid samples (1) is permeable to radiation for an optical measurement.
31. The system according to claim 1, wherein the device for handling liquid samples (1) has at least one light beam-conducting element for an optical measurement.
32. The system according to claim 1, wherein the mouth (5) and/or the passage (16) and/or the aperture (37, 38) of the device for handling liquid samples (1) have associated therewith at least one closure which can be optionally closed.

33. A system having a plurality of juxtaposed and interconnected devices of the device for handling liquid samples (1) according to claim 1.
34. The system according to claim 33, wherein the plurality of juxtaposed and interconnected devices of the device for handling liquid samples (1) are formed from common planar elements (2, 3).
35. A system comprising a plurality of superposed devices for handling liquid samples (1) according to claim 1.
36. The system according to claim 35, wherein the superposed devices for handling liquid samples (1) are connected to each other.
37. The system according to claim 33, wherein the device for handling liquid samples (1) is adapted to be disassembled into at least two smaller devices for handling liquid samples (1) along at least one break line disposed between two wells.

38. The system according to claim 1, wherein the displacement device (21) or the actuation device and the device for mounting are fixedly connected to each other.
39. The system according to claim 1, wherein the displacement device (21) has at least one piston cylinder device (24, 25).
40. The system according to claim 1, wherein the displacement device (21) has a pump and a valve device to connect or disconnect the suction end in the pump to or from the device for handling liquid samples (1).
41. The system according to claim 40, which has a chamber for a positive and/or negative pressure which is connected to the pump and is adapted to be connected to the device for handling liquid samples via the valve device.
42. The system according to claim 1, wherein the displacement device (21) or the actuation device initiates one or more pressure fluctuations in the well

(4) in a mixed mode of operation in order to thoroughly mix a liquid sample in the well (4).

43. The system according to claim 1, wherein the device for releasably mounting is a plug-in well into which a device for handling liquid samples (1) is adapted to be lockingly plugged in with a plug-in end.
44. The system according to of claim 1, wherein the device for releasably mounting has associated therewith a pressure spring (23) which presses a plugged-in device for handling liquid samples (1) against the line (20) or the actuation device.
45. The system according to claim 1, wherein the line (20) has associated therewith an O-type sealing ring (22) for sealingly bearing on the outer edge of the passage (16) of the device for handling liquid samples (1).
46. The system according to claim 1, wherein the device for releasably mounting helps in mounting at least two devices for handling liquid samples (1) in such a way that the wells (4) thereof are sealingly connected

to each other via the passage (16) and/or the mouth (5) and the passage (16) or the limitation wall of one device for handling liquid samples (1) is connected to the displacement device (21) or is coupled to the actuation device in order to receive a sample liquid in a device for handling liquid samples (1) from outside and/or to deliver it to the outside and/or to transfer it between at least two devices for handling liquid samples.

47. The system for handling liquid samples according to claim 1, comprising a handling apparatus with a centrifuge rotor (27) which has a device for releasably mounting at least one device for handling liquid samples (1).
48. The system according to claim 47, wherein the device for releasably mounting is a well (28) for positively receiving a device for handling liquid samples (1).
49. The system according to claim 47, wherein the well has recessed grips (29) for laterally gripping the device for handling (1) and/or has locking elements for laterally locking the device for handling liquid samples (1) in

place and/or has sealing elements for sealing the apertures of the device for handling (1).

50. The system according to claim 1, which has a device for releasably mounting at least two devices for handling liquid samples (1) which is such that the wells (4) thereof are sealingly connected to each other via the passage (16) and/or the mouth (5) in order to transfer sample liquid between the devices for handling liquid samples (1) during centrifuging.
51. A system for handling liquid samples according to claim 1, including a handling apparatus with a heating device and a support associated therewith for storing at least one device for handling liquid samples (1) so that a liquid sample received therefrom is adapted to be heated by means of the heating device.
52. The system according to claim 51, wherein the heating device has a contact surface which comes into a surface contact with a planar element (2,3) of

the device for handling liquid samples (1) if a device for handling liquid samples (1) is stored on the support.

53. A system for handling liquid samples according to claim 1, including a handling apparatus with an optical measuring device and a device for releasably mounting at least one device for handling liquid samples (1) so that the latter, if arranged in the device for releasably mounting, is disposed with its well (4) in the path of beams of the optical measuring device.
54. The system according to claim 1, wherein the elements of one or more handling apparatuses are disposed in or on at least one chassis and/or casing.
55. The system according to claim 54, wherein a plurality of handling apparatuses have one or more common elements.
56. The system according to claim 1, wherein the at least one handling apparatus is manually operable and/or works automatically and/or is an apparatus that can be held by hand (a hand-operated apparatus).

57. The system according to claim 1, wherein at least two handling apparatuses interact automatically.
58. The system according to claim 1, wherein at least one further handling device exists for transporting devices for handling liquid samples (1) between various handling apparatuses and/or at least one handling apparatus and an input station and/or an output station and/or for supporting the handling apparatuses during their operation.
59. A process for the manufacture of a device for handling liquid samples (1) wherein
- the surfaces of the planar elements (2, 3) are structured,
 - a plurality of planar elements (2, 3) are brought into a relationship covering each other,
 - are connected to each other, and

- wherein the interconnected planar elements (2, 3) are broken up into individual devices for handling liquid samples (1) in a direction perpendicular to the plane of main extension of the planar elements.

60. The process according to claim 59, wherein at least one planar element (2, 3) is subjected to a surface treatment prior to being connected to at least one further planar element (2, 3).